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LOGGING and THE PRODUCTION OF LUMBER

Prepared by
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Before a stand of timber is logged, certain studies must be made to determine the volume of timber in the different parts of the area and the most practical methods of logging. The volume of timber is estimated by a sampling procedure, known as cruising. Qualified timber cruisers scout the entire area and keep a record of the number of trees by species and sizes on certain sample areas which they measure. These notes are then worked up into an estimate of the total volume on the area and the distribution of that volume over the area. Usually at the same time possible routes for logging railroads or truck roads are scouted and preliminary locations for transportation routes established. If the timber stands are remote from resident labor supplies, it will be necessary to build a logging camp to house the workers, and as a part of the preliminary studies sites for such camps are chosen. On the basis of these studies, a logging plan is usually prepared to govern the operation.

The next step is construction of the camps and the road or railroad for transporting logs from the forests. Some camps are designed for use by men with their families and others for men only. A typical camp for the workers only will comprise a cook-house with dining-room facilities, an office which usually includes a small store, one or more bunkhouses, bath and wash-house facilities, and either stables or shops for machinery repair. At camps which are to be occupied by workers and their families, small houses are usually erected; and such organizations as schools, YMCA, and churches may be established. In some regions logging camps may consist of railroad cars or portable buildings, which are moved from one location to another. Except for timber stands that are to be taken out by a river drive, there must be available either a truck road or a logging railroad over which logs may be sent to market. The days of the logging railroad are passing. More and more, lumber companies are using trucks to haul logs from the woods. The larger companies usually build good roads, frequently graveled and wide enough for two-way traffic. Construction of the railroad or truck road must be started before logging operations commence.

The first operation in the forest is that of felling and bucking. In this operation the trees are cut down and the boles are cut up into logs. While the use of power saws for both felling and bucking is increasing, the nearly universal tools are an ordinary crosscut saw and axes, wielded by two sawyers, sometimes assisted by a third man. In bucking the bole is cut into logs, which are usually 10 to 32 feet in length. On the West Coast the logs of the large trees may be cut into longer lengths, 40 feet and over. Sometimes boles are sent whole into the mills or to the railroad landings to be bucked there.

The next operation is the transportation of the logs from the place
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where they are cut to a place called a landing where the logs may be loaded onto trucks or railroad cars or dumped into a river. This is known as skidding. In some localities horses or mules may be used in skidding, but in most parts of the country tractors or heavy donkey engines are employed. The use of donkey engines requires large investment for wire rope and heavy equipment, and is likely to be very destructive to young growth. For these reasons donkey engines are gradually being replaced by tractors, which ordinarily do the same work more efficiently with lower investment and less damage to young growth.

From the landing in the woods the logs are transported to the mill. Where the timber is close to the mill this may be relatively easy, but where the timber is a long distance from the mill the main transportation is the most important and the most expensive part of the logging job. Lumber companies, therefore, give much thought to the main transportation system, the logs that have been skidded to a landing are loaded by power machines onto flat cars. These cars are usually hauled out over the railroad in logging trains directly to the mills. Where a truck road is used, the logs are loaded onto logging trucks by either power or horse equipment and transported either to the mill or to another landing where they may be loaded onto railroad cars for shipment to the mill. Since this system is now very commonly used, most of the commercial truck manufacturing concerns make specially designed logging trucks.

In some parts of the country logs are floated down a river to the mill either on the spring freshets or by using the current of the stream. Where this is feasible, it is a very cheap method of transportation. One of the big disadvantages of river driving, however, is the damage done to the logs in transit. Another is the fact that logs arrive at the mill only once a year and if the water is insufficient to bring down the total supply, the mill may run out of logs before the next year's drive. A picturesque but expensive way of transporting logs is by a specially constructed flume, usually fed by mountain streams. Along the ocean coast or in the Great Lakes area, logs or cordwood bolts may be transported either on rafts or on barges or ships.

PRODUCTION OF LUMBER

Whip sawing, or pit sawing, the primitive method of getting lumber out of logs, is still practiced to some extent by mountaineers of the Appalachian region and to a much greater extent by the people of China, Japan, India, and the Philippines. A sawyer stands on top of the log and pulls the saw up and a sawyer in the pit pulls it down. In this way from 100 to 200 board feet of plank can be sawed out in a day.

Most of the lumber now produced in this country is manufactured at power driven sawmills. The very largest of these cut approximately 1,000,000 board feet of lumber a day. From that large size, the sawmills range down to very small portable ones which cut perhaps 3,000 to 10,000 board feet of lumber in a day. Large mills are usually powered by steam, while smaller mills may use other energy sources. Small gasoline or Diesel motors are commonly used to drive small portable mills.

When logs arrive at the sawmill they are usually dumped into a log pond. Here they may be sorted to group logs of the same species or grades together. From the pond the logs are carried up an incline to the log deck of the sawmill, where they await their turn to be sawed. At the larger mills there is automatic equipment for placing the logs on the log carriage and for rolling them over on the carriage after one or more cuts have been made. At the smaller mills this work is usually done by men using peaveys.

Logs are clamped tightly on a movable carriage which runs along a straight track and carries them past a stationary saw, called the head saw. Head saws are of two common types - band saws and circular saws. Usually the larger mills have band saws, and the smaller ones have circular saws. After a board is sawed off the log at the head saw it falls onto a set of rollers and is carried on for further processing.

Some small mills, and particularly the small portable mills, may have very little equipment besides the head saw. Most sawmills, however, have a machine called an edger which trims the rough edges of the boards after they leave the head saw to make the proper width for a piece of lumber. The boards then go to one or more saws, known as trimmer saws, which square the ends and cut the boards into short lengths if necessary. In most of the smaller mills these three steps constitute the principal manufacturing processes. However, some larger mills have much more elaborate equipment and machinery for the manufacture of lumber, including gang saws or various kinds of resaws.

At the larger mills lumber is graded, sorted, and seasoned. The lumber is graded, or classified according to grade rules, and sent to the sorting table where the different grades are sorted and piled separately. Usually the sorted lumber is taken either to a storage yard to be seasoned or to the dry-kilns for artificial drying. Ordinarily only the larger sawmills have dry-kilns. Frequently the very small portable mills do not grade lumber nor pile it for seasoning. The length of time required for the seasoning of lumber depends on the kind of wood, dimensions of the board, the arrangement of the yard, methods of piling, and weather conditions. In some mills the better grades of lumber are kiln-dried because that process takes less time and eliminates some danger of deterioration. It is essential, however, that kiln conditions be regulated carefully if kiln damage to the lumber is to be avoided. Kiln drying of lumber reduces the area of storage space needed by the mill, and makes possible more rapid shipment of manufactured lumber to the market.

After drying, the usual practice in the larger mills is to further manufacture the lumber by planing. A planing mill, which is usually an integral part of the sawmill plant, may have just a few machines for planing boards and cutting tongue and groove joints or it may be equipped with a great variety of machines for turning out various manufactured products.

The final marketing of lumber is as carefully organized and as highly competitive a venture as is the marketing of most other generally used commercial products. Lumber may be sent direct from a sawmill to local users, but ordinarily it is shipped from a sawmill to wholesale yards. The wholesale yards usually carry a large stock of lumber and from their stocks supply retail yards. The retail yards in turn provide needed material to the final user.

